



## APPLICATION FOR PATENT

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10 Title: PLANTS CHARACTERIZED BY ENHANCED GROWTH  
AND METHODS AND NUCLEIC ACID CONSTRUCTS  
USEFUL FOR GENERATING SAME

This application is a continuation-in-part of U.S. Patent Application No. 15 10/410,432, filed April 10, 2003, which is a continuation-in-part of PCT/IL02/00250, filed March 26, 2002, which claims priority of U.S. Patent Application No. 09/828,173, filed April 9, 2001.

20 This application is also a continuation-in-part of U.S. Patent Application No. 09/887,038, filed June 25, 2001, which is a continuation of U.S. Patent Application No. 09/332,041, filed June 14, 1999, now U.S. Patent No. 6,320,101, issued November 20, 2001.

#### FIELD AND BACKGROUND OF THE INVENTION

The present invention relates to plants characterized by enhanced growth 25 and to methods and nucleic acid constructs useful for generating same.

Growth and productivity of crop plants are the main parameters of concern to a commercial grower. Such parameters are affected by numerous factors including the nature of the specific plant and allocation of resources within it, availability of resources in the growth environment and interactions with other 30 organisms including pathogens.

Growth and productivity of most crop plants are limited by the availability of CO<sub>2</sub> to the carboxylating enzyme ribulose 1,5-bisphosphate carboxylase/oxygenase (Rubisco). Such availability is determined by the ambient concentration of CO<sub>2</sub> and stomatal conductance, and the rate of CO<sub>2</sub> fixation by 35 Rubisco as determined by the Km(CO<sub>2</sub>) and Vmax of this enzyme [31-33].

In C3 plants, the concentration of CO<sub>2</sub> at the site of Rubisco is lower than the Km(CO<sub>2</sub>) of the enzyme, particularly under water stress conditions. As such, these crop plants exhibit a substantial decrease in growth and productivity when exposed to low CO<sub>2</sub> conditions induced by, for example, stomatal closure which 40 can be caused by water stress.